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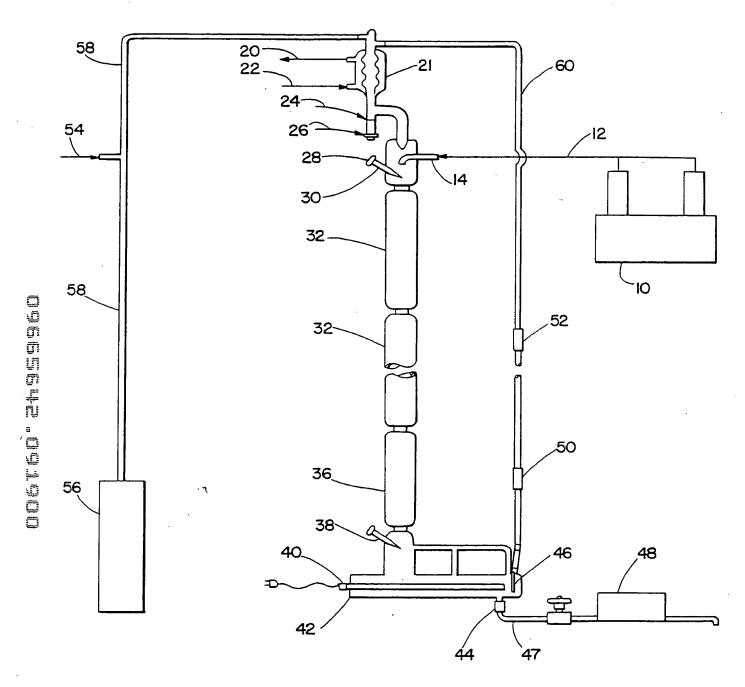


Fig. I

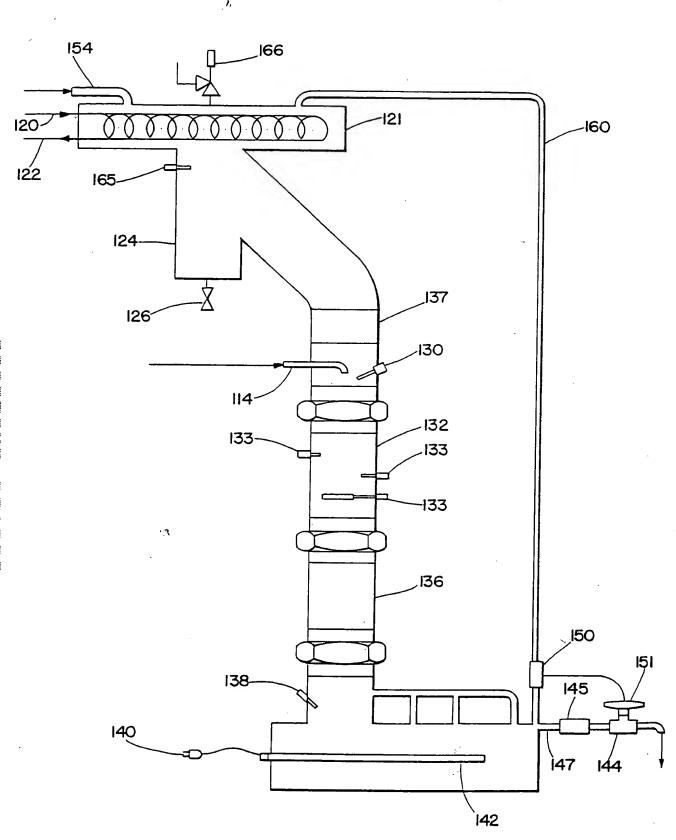
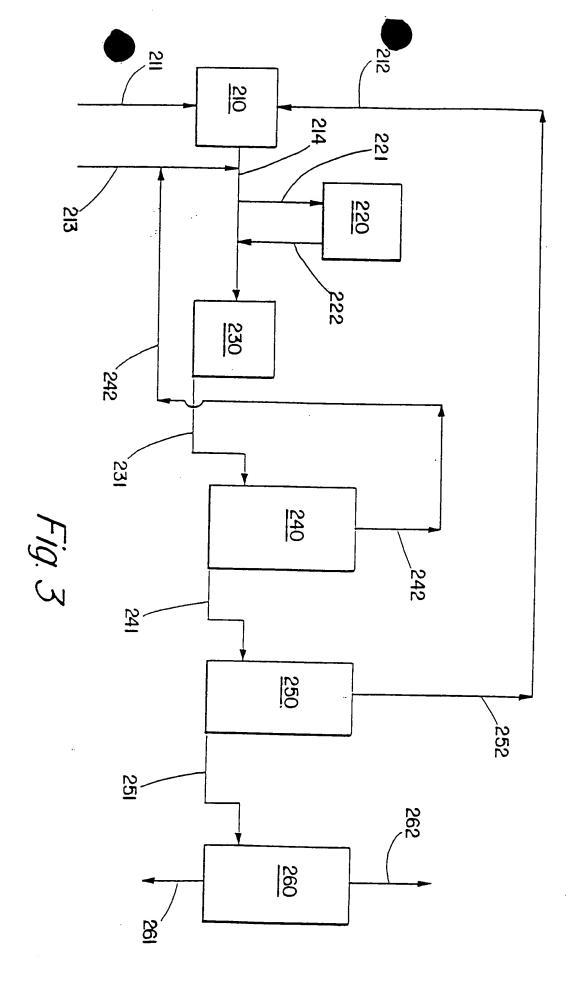


Fig. 2



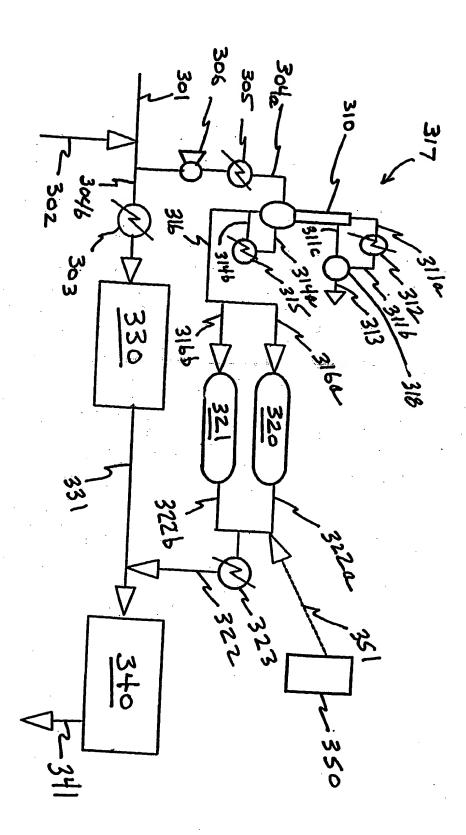


FIG. 4

FIGURE 5. 2-PHENYL ISOMER DISTRIBUTION DETERGENCY STUDY

			CONDITIONS: tergotometer	74.30	62.20	50.20	38.20	26.20	14.20	2-PHENYL	
	100°F 2g.Лoad 15 min.wash/5 min.rinse	150ppm hardwater 100 rpm	: targotomater	3.82	3.60	3.40	4.22	3.61	3.36	cotton	REDEPOSITION
	i min.rinse	vater		7.78	-9.51	-9.23	-10.51	-12.98	-12.77	poly/cotton	SITION
TOTAL CLEA	ANING	(DELT/	AR)	22.49	22.89	20.91	22.56	23.07	21.36	cottan	DIRTY MOTOR OIL
55.0 55.0 55.0 55.0	70.0	80.0 ·	90.0	3.33	3.01	1.67	1.90	-0.51	-2.52	poly/cotton.	TOR OIL
55.0				4.68	4.27	4.94	4.38	4.05	3.84	cotton	DUST SEBUM
			150 pp	3.30	-3.95	4.48	-6.79	-6.08	-6.15	poly/cotton	EBUM
			m HARDN	-1.56	-1.21	-0.88	-1.10	-0.63	-1.17	cotton	GR
			150 ppm HARDNESS (Ca/Mg = 2/1)	-1.70	-1.69	-1.66	-1.55	4.77	4.77	poly/cotton	GRASS
7.00			lg = 2/1)	3.62	2.72	3.27	2.83	2.21	2.57	cotton	BLOOD,MILK,SOIL
			-	8.48	7.48	6.70	6.95	6.06	5.95	poly/cotton	IILK,SOIL
1				11.11	10.86	9.11	8.76	7.17	7.07	cotton	EMPA :
				18.00	19.10	16.56	13.40	12.58	11.67	poły <i>i</i> catton	EMPA 101&104
				10.50	9.17	10.08	9.25	9.76	9.27	cotton	CT.
				10.81	10.60	9.74	9.30	9.05	8.70	poly/cotto	CLAY

osessulla os a soc

50.0 55.0

14.20 26.20 38.20 50.20 62.20

74.30

PERCENT 2-PHENYL ISOMER

FIGURE 6. Conventional LAS (A225) HARD WATER TURBIDITY

SOLUTION LAS STOCK HARD WATER Water Hardness ppm LAS WT% PH TURBIDITY 1 100.00 0.00 0.00 1.12 10.15 0.00 2 99.94 1.02 304.44 1.11 10.32 0.20 3 100.33 2.00 588.95 1.10 10.20 1.02 4 100.76 2.46 718.17 1.10 10.18 6.00 5 100.05 2.95 863.05 1.09 10.27 88.50 6 99.78 4.04 1172.61 1.08 10.22 834.00							TU) 1000.00
LAS STOCK HARD WATER Water Hardness ppm LAS WT% PH 100.00 0.00 0.00 1.12 10.15 99.94 1.02 304.44 1.11 10.32 100.33 2.00 588.95 1.10 10.20 100.76 2.46 718.17 1.10 10.18 99.78 4.04 1172.61 1.08 10.22			Y	25 TURBIDIT	A2		
LAS STOCK HARD WATER Water Hardness ppm LAS WT% PH 100.00 0.00 0.00 1.12 10.15 99.94 1.02 304.44 1.11 10.32 100.33 2.00 588.95 1.10 10.20 100.76 2.46 718.17 1.10 10.18 100.05 2.95 863.05 1.09 10.27	834.00	10.22	1.08	1172.61	4.04	99.78	6
LAS STOCK HARD WATER Water Hardness ppm LAS WT% PH 100.00 0.00 0.00 1.12 10.15 99.94 1.02 304.44 1.11 10.32 100.33 2.00 588.95 1.10 10.20 100.76 2.46 718.17 1.10 10.18	88.50	10.27	1.09	863.05	2.95	100.05	5
LAS STOCK HARD WATER Water Hardness ppm LAS WT% PH 100.00 0.00 0.00 1.12 10.15 99.94 1.02 304.44 1.11 10.32 100.33 2.00 588.95 1.10 10.20	6.00	10.18	1.10	718.17	2.46	100.76	4
LAS STOCK HARD WATER Water Hardness ppm LAS WT% PH 100.00 0.00 1.12 10.15 99.94 1.02 304.44 1.11 10.32	1.00	10.20	1.10	588.95	2.00	100.33	ü
LAS STOCK HARD WATER Water Hardness ppm LAS WT% PH 100.00 0.00 0.00 1.12 10.15	0.20	10.32	1.11	304.44	1.02	99.94	2
LAS STOCK HARD WATER Water Hardness ppm LAS WT% PH	0.00	10.15	1.12	0.00	0.00	100.00	1 .
	TURBIDITY	PH	LAS WT%	Water Hardness ppm	HARD WATER	LAS STOCK	SOLUTION

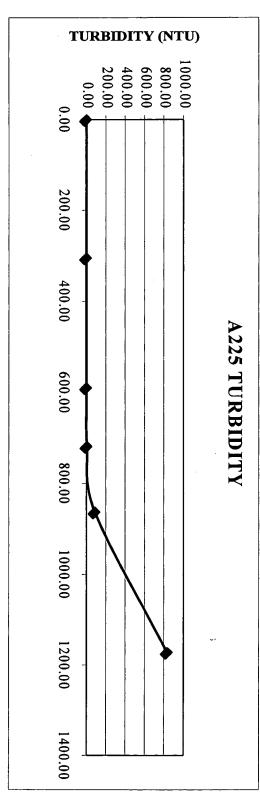


FIGURE 7. Super High 2-phenyl LAS HARD WATER TURBIDITY

				_]
(NTU)		6	7	6	5	4	3	2	1	SOLUTION
	SUPE	100.83	93.42	102.89	100.30	101.79	101.00	101.36	101.70	LAS STOCK
	R HIGH 2	9.15	8.00	7.04	5.17	4.01	3.01	1.05	0.00	HARD WATER
	SUPER HIGH 2-PHENYL TURB	2507.04	2376.95	1929.79	1477.12	1142.12	872.06	308.96	0.00	Water Hardness ppm
	TURBIDITY	1.04	1.04	1.06	1.07	1.09	1.10	1.12	1.13	LAS WT%
	ΤΥ	9.79	9.64	9.84	9.90	9.97	9.55	9.92	9.71	H G
		850.00	1098.00	305.00	30.00	4.70	1.30	0.30	0.60	TURBIDITY

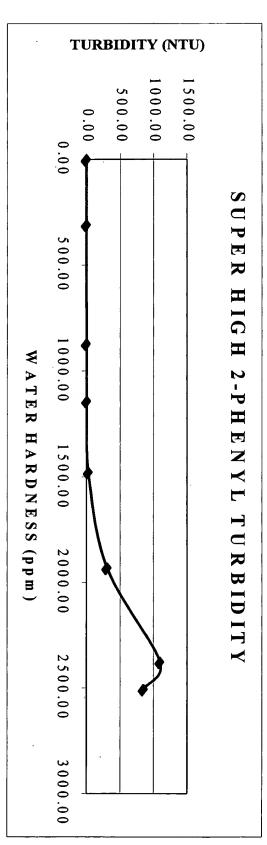


FIGURE 8. Hard water tolerance comparison of Super High 2-phenyl sodium-LAS versus conventional sodium-LAS at 25°C.

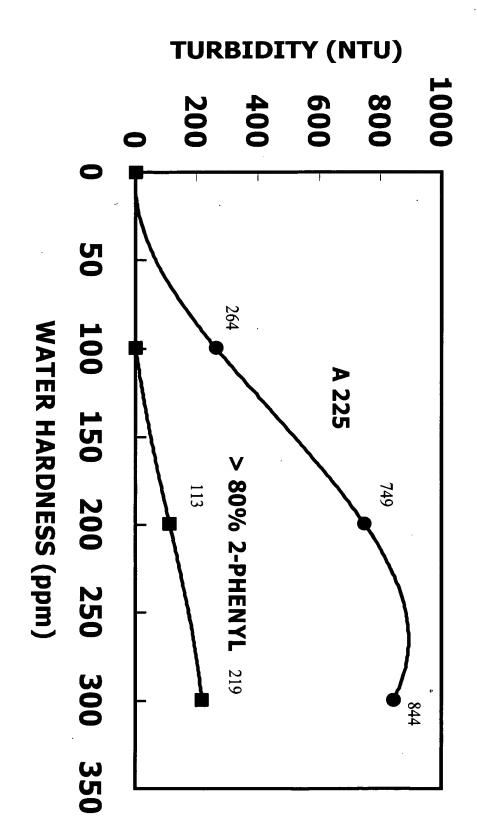
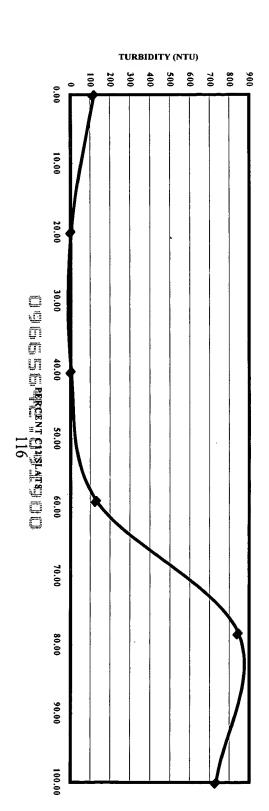


FIGURE 9. Turbidity study comparing of Super High 2-phenyl sodium-LAS ("SLAS") versus Super High 2-toluyl sodium-LAS ("SLATS") at 25°C.

	6	5	4	u	2	ı	SAMPLE
	0	1.6	3.36	4.81	6.54	11.8	GMS SLATS (8053-8)
	œ	6.43	4.99	3.34	1.82	0	SAMPLE GMS SLATS (8053-8) GMS SLAS (7961-97-2) GMS HARD WATER
	8.02	8.12	8.08	8.02	8.04	7.98	GMS HARD WATER
SLAS + SLATS = 100 @ 300 PPM TURBIDITY	791.34	784.05	784.15	784.27	784.27	784.22	GMS DI WATER
	299.34	305.78	304.13	301.92	302.59	300.47	HARD WATER
	0.00	19.93	40.24	59.02	78.23	100.00	% SLATS
	120	3.5	3.9	132	845	733	TURBIDITY



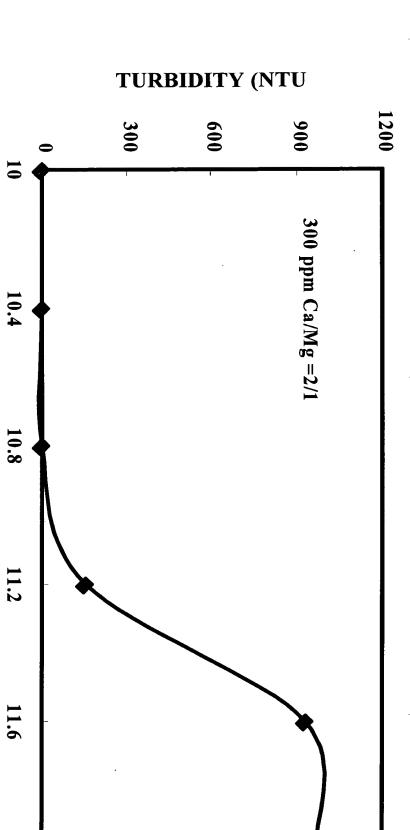


FIGURE 10. SLATS ALKYL CHAIN TURBIDITY AT 300 ppm HARD WATERs

AVERAGE ALKYL CHAIN LENGTH

12

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